



*Date of filing Complete Specification : July 15, 1953.*

*Application Date : Aug. 21, 1952. No. 20983/52.*

*Complete Specification Published : July 6, 1955.*

Index at Acceptance :—Class 103(2), C6.

## COMPLETE SPECIFICATION.

### Improvements in Seating Arrangements for Passenger Carrying Vehicles.

We, WEST YORKSHIRE ROAD CAR COMPANY LIMITED, of East Parade, Harrogate, in the County of York, a British Company, and HECTOR NOEL TUFF, of the Company's address, a British Subject, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement :—

This invention relates to seating arrangements for passenger-carrying vehicles and particularly for buses.

In the seating arrangements of buses, wherein the rows of seats run transversely from a gangway extending lengthwise of the vehicle, difficulty is often experienced in accommodating the required number of passengers in a row. This difficulty occurs even with the twin type of seat lying on each side of a central gangway, but is more pronounced on the upper deck of so-called low-bridge double-deck buses which have a sunken gangway on the off-side of the vehicle. The seats in this type of vehicle are of the bench type to accommodate three or four passengers. As all the leading dimensions of the vehicle are governed by set standards the length of the bench is limited to a predetermined size which in practice is often insufficient to accommodate the full number of passengers on the seat, particularly when some or all of the people are large in stature. Thus the outer passenger must often balance on the end of the seat in an extremely uncomfortable posture owing to the lack of proper seating space.

It is known in Patent Specification No. 720/14 for the seating on the upper deck of a tram car to be in the form of twin seat units mounted to swing about a pivot adjacent the outer wall of the tram car. The seats are round and each can turn with its back-rest on the mounting to face in the direction the car will travel and the unit swings from one

position to another for the same purpose. In each position the unit is at an angle say  $45^\circ$ , to the car wall so that the outside seat is in the advance of the inner seat.

The main object of this invention is to provide an improved seating arrangement for buses and other vehicles which obviates the above disadvantages.

According to the present invention there is provided a seating arrangement for vehicles, wherein rows of seats for two or more passengers in a row are provided extending from a gangway in fixed relation to fixed mounting means, each seat or seat unit is substantially rectangular in plan with each succeeding seat or seat unit in each row fixed in advance of the preceding seat and all the seats positively set at an inclined angle to the length of the vehicle facing slightly away from the gangway.

The invention also includes the improved arrangement wherein rows of three or four separate staggered seats, they may be on a common support, extend from a side wall-type gangway. Alternatively, a pair of twin seat units may be in staggered relationship in a row although they may be joined together and/or carried by a common mounting. The seats in a row may be so staggered that the shoulder of the occupant of a seat can overlap, where necessary, the shoulder of the occupant of the adjacent seat.

Referring now to the accompanying drawings in which two embodiments of the invention are shown :—

Fig. 1 is a perspective view of an upper bus deck with an improved seating arrangement ;

Fig. 2 is a plan view of Fig. 1 ;

Fig. 3 is a perspective view of an upper bus deck with modified twin seat units ; and Fig. 4 is a plan view of Fig. 3.

In a particular embodiment of this invention shown in Figs. 1 and 2 for the upper deck 1 of a so-called low-bridge double-deck

[Price 3s. 0d.]

bus, an improved seating arrangement includes rows of four separate seats 2 in staggered relationship. It will be appreciated that the construction of the bus may be such that one or more rows may have less (or more) seats as desirable, or even of a different arrangement. The row of staggered seats is such that from the sunken gangway 3 each succeeding seat is in advance of the preceding one a given distance, and thus the occupant of each seat is independent of the occupant of the adjacent seat. Thus should a large-framed person occupy one of such seats his shoulder can overlap the shoulder of the occupant of the adjacent seat without discomfort to either person. These seats are also set at a required angle, this need only be slight, to the length of the bus so that the occupant tends to face slightly away from the gangway. This arrangement ensures that all the people have a full foot rest on the deck 1, even the occupant of the seat adjacent the gangway, and this is of considerable importance where the gangway is of the sunken type shown. The backs 4 of the seats may, if desired, be shaped and have protruding side wings 5 or their equivalent and whilst the seats each have their own mounting 6 they could all be on one mounting if desired. Moreover, whilst the backs are preferably made separate they could be joined together without interfering with the staggered relationship and comfort of the passenger.

In an alternative arrangement shown in Fig. 3 and 4 a row comprises a pair of twin seat units 7 to accommodate four passengers and these two units are staggered and set at an angle in a similar manner to that described for the four separate seats in a row. Here again the back rests 8 of the seat units may be separate or joined together by the parts 9 as shown or in some other manner. Mountings 10 are provided although they may be otherwise constructed.

A seating arrangement as above described allows greater leg room for passengers in a row due to the angularity of the seats in conjunction with the staggering arrangement, and generally speaking there is greater comfort all round for the passengers in a row. Moreover, the conductor of the vehicle can collect fares much easier in view of the fact that the passenger farthest away from him can pass his fare across the front of the other passengers in the row without discomfort to himself or any other occupants of the row of seats. Also as before stated there is greater comfort and security for the passenger seated near the gangway as both his feet can be placed firmly on the floor space at one level. The arrangement also allows the full capacity of the top deck of a bus to be occupied freely whatever the stature of the individual passengers, and, moreover, the conductor can at a glance see

the number and location of vacant seats owing to the staggering of the bench type seat into separate units or twin units. It will readily be understood that although the improved arrangement is particularly advantageous for the upper decks of buses, the arrangement can also be used on single deck buses or the lower deck of a bus where it is customary to have a central gangway with rows of double seats on each side thereof. The aforesaid staggered and angular seating arrangement could be used in this arrangement to advantage. Also, this improved seating arrangement does enable a luxury type of seat to be provided upstairs on a double-deck bus which is not possible with the present type of bench seat arrangement, and thus vehicle so fitted could be used for touring or similar purposes which at present is not customary, due to the uncomfortable type of seat on the upper deck. Moreover, this improved seating arrangement lends itself readily to the construction of seats of the conventional coach type, substantially of all timber framing, or of tubular metal or extruded sections.

What we claim is:—

1. Seating arrangement for vehicles, wherein rows of seats for two or more passengers in a row are provided extending from a gangway in fixed relation to fixed mounting means, each seat or seat unit is substantially rectangular in plan with each succeeding seat or seat unit in each row fixed in advance of the preceding seat and all the seats positively set at an inclined angle to the length of the vehicle facing slightly away from the gangway.

2. Seating arrangement according to Claim 1, wherein rows of three or four separate staggered seats, they may be on a common support, extend from a side wall-type gangway.

3. Seating arrangement according to Claim 1, including a pair of twin seat units in staggered relationship in a row.

4. Seating arrangement according to Claim 3, wherein the seat units are separate or joined together and/or carried by a common mounting.

5. Seating arrangement according to any of the preceding claims, wherein the seats in a row are so staggered that the shoulder of the occupant of a seat can overlap, where necessary, the shoulder of the occupant of the adjacent seat.

6. Seating arrangement for vehicles arranged and constructed substantially as described with reference to the accompanying drawings.

URQUHART-DYKES & LORD,  
Chartered Patent Agents,  
12 South Parade, Leeds 1,  
and Maxwell House, 11 Arundel Street,  
Strand, London, W.C.2.

## PROVISIONAL SPECIFICATION.

## Improvements in Seating Arrangements for Passenger Carrying Vehicles.

We, WEST YORKSHIRE ROAD CAR COMPANY, LIMITED, of East Parade, Harrogate, in the County of York, a British Company, and HECTOR NOEL TUFF, of the Company's address, a British Subject, do hereby declare this invention to be described in the following statement:—

This invention relates to seating arrangements for passenger carrying vehicles and particularly for buses.

In the seating arrangements of buses, wherein the rows of seats run transversely from a gangway extending lengthwise of the vehicle, difficulty is often experienced in accommodating the required number of passengers in a row. This difficulty occurs even with the twin type of seat lying on each side of a central gangway, but is more pronounced on the upper deck of so-called low-bridge double deck buses which have a sunken gangway on the offside of the vehicle. The seats in this type of vehicle are of the bench type to accommodate three or four passengers. As all the leading dimensions of the vehicle are governed by set standards, the length of the bench is limited to a predetermined size which in practice is often insufficient to accommodate the full number of passengers on the seat, particularly when some or all the people are large in stature. Thus the outer passenger must often balance on the end of the seat in an extremely uncomfortable posture owing to the lack of proper seating space.

The main object of this invention is to provide an improved seating arrangement for buses and other vehicles which obviates the above disadvantages.

According to the present invention there is provided a seating arrangement for vehicles wherein rows of two or more seats are provided extending from a gangway with each succeeding seat in each row in advance of the preceding seat and all the seats set at an angle to the length of the vehicle facing slightly away from the gangway.

The invention also includes the improved arrangement wherein rows of three or four separate (in effect) staggered seats (they may be on a common support and even joined together) extend from a side gangway. Alternatively, twin seat units may be in staggered relationship in a row although they may be joined together and/or carried by a common mounting. The seats in a row may be so staggered that the shoulder of the occupant or a seat can overlap, where necessary, the shoulder of the occupant of the adjacent seat.

In a particular embodiment of this invention for the upper deck of a so-called low-bridge double deck bus, an improved seating arrangement includes rows of four separate seats in staggered relationship. It will be appreciated that the construction of the bus may be such that one or more rows may have less (or more) seats as desirable, or even of a different arrangement. The row of staggered seats is such that from the gangway each succeeding seat is in advance of the preceding one a given distance, and thus the occupant of each seat is independent of the occupant of the adjacent seat. Thus should a large framed person occupy one of such seats his shoulder can overlap the shoulder of the occupant of the adjacent seat without discomfort to either person. These seats may also be set at a required angle, this need only be slight, to the length of the bus so that the occupant tends to face slightly away from the gangway. This arrangement ensures that all the people have a full foot rest, even the occupant of the seat adjacent the gangway, and this is of considerable importance where the gangway is of the sunken type. The backs of the seats may, if desired, be shaped and have protruding side wings or their equivalent and whilst the seats may each have their own mounting they could all be on one mounting if desired. Moreover, whilst the backs are preferably made separate they could be joined together without interfering with the staggered relationship and comfort of the passenger.

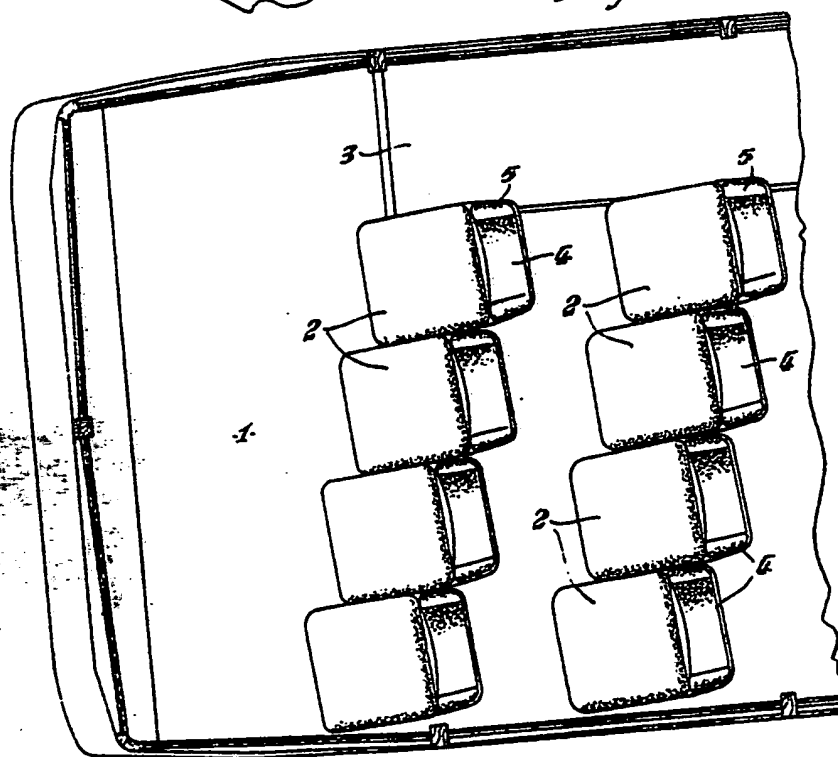
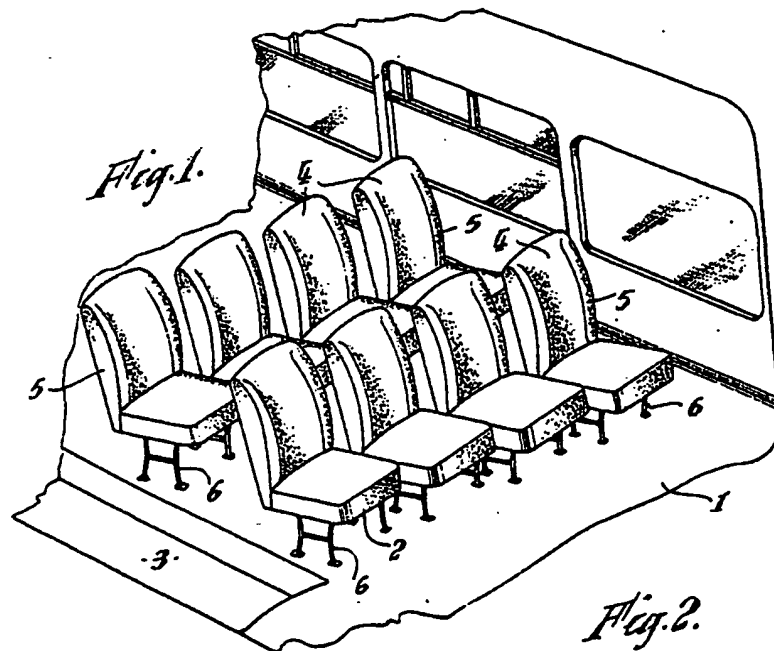
In an alternative arrangement a row may comprise a pair of twin seat units to accommodate four passengers and these two units are staggered and set at an angle in a similar manner to that described for the four separate seats in a row. Here again the back rests of the seat units may be separate or joined together as desirable.

A seating arrangement as above described allows greater leg room for passengers in a row due to the angularity of the seats in conjunction with the staggering arrangement, and generally speaking there is greater comfort all round for the passengers in a row. Moreover, the conductor of the vehicle can collect fares much easier in view of the fact the passenger farthest away from him can pass his fare across the front of the other passengers in the row without discomfort to himself or any other occupants of the row of seats. Also as before stated there is greater comfort and security for the passenger seated near the gangway as both his feet can be placed firmly on the floor space at one level.

The arrangement also allows the full capacity of the top deck of a bus to be occupied freely whatever the stature of the individual passengers, and, moreover, the conductor can at a glance see the number, and location, of vacant seats owing to the staggering of the bench type seat into separate units or twin units. It will readily be understood that although the improved arrangement is particularly advantageous for the upper decks of buses, the arrangement can also be used on single deck buses or the lower deck of a bus where it is customary to have a central gangway with rows of double seats on each side thereof. The aforesaid staggered and angular seating arrangement could be used in this arrangement to advantage. Also, this improved seating arrangement does enable a luxury type of seat to be provided upstairs on a double deck bus which is not possible with the present type of bench seat arrangement, and thus vehicles so fitted could be used for touring or similar purposes which at present is not customary, due to the uncomfortable type of seat on the upper deck.

URQUHART-DYKES & LORD,  
Chartered Patent Agents,  
12 South Parade, Leeds 1,  
and  
Maxwell House, 11 Arundel Street,  
Strand, London, W.C.2.

Abingdon: Printed for Her Majesty's Stationary Office, by Burgess & Son (Abingdon), Ltd.—1955.  
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2,  
from which copies may be obtained.



733,081 COMPLETE SPECIFICATION  
 2 SHEETS  
 This drawing is a reproduction of  
 the Original on a reduced scale.  
 SHEETS 1 & 2

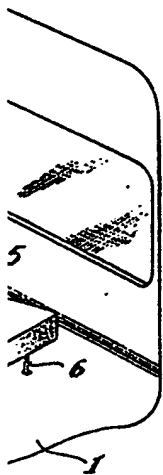


Fig. 2.

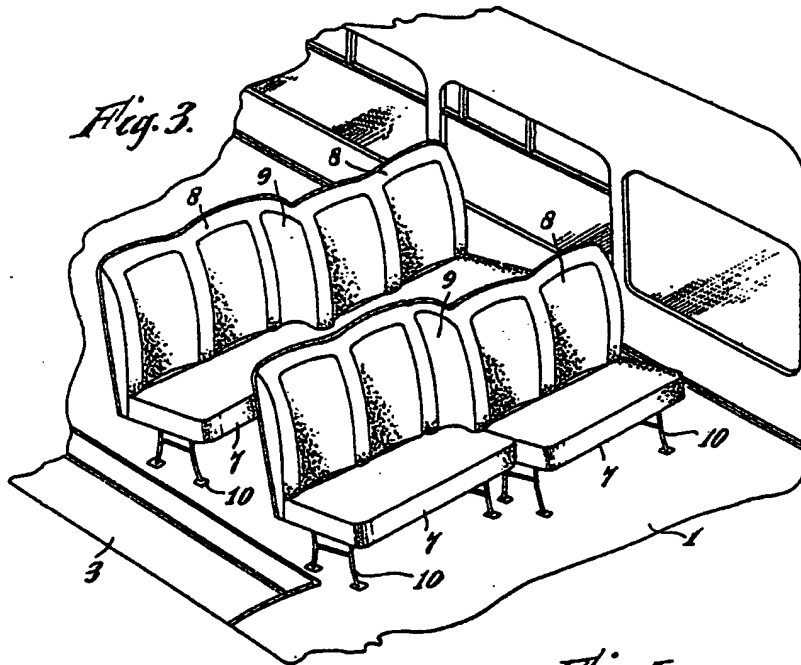
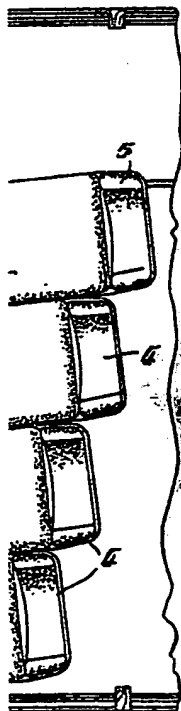
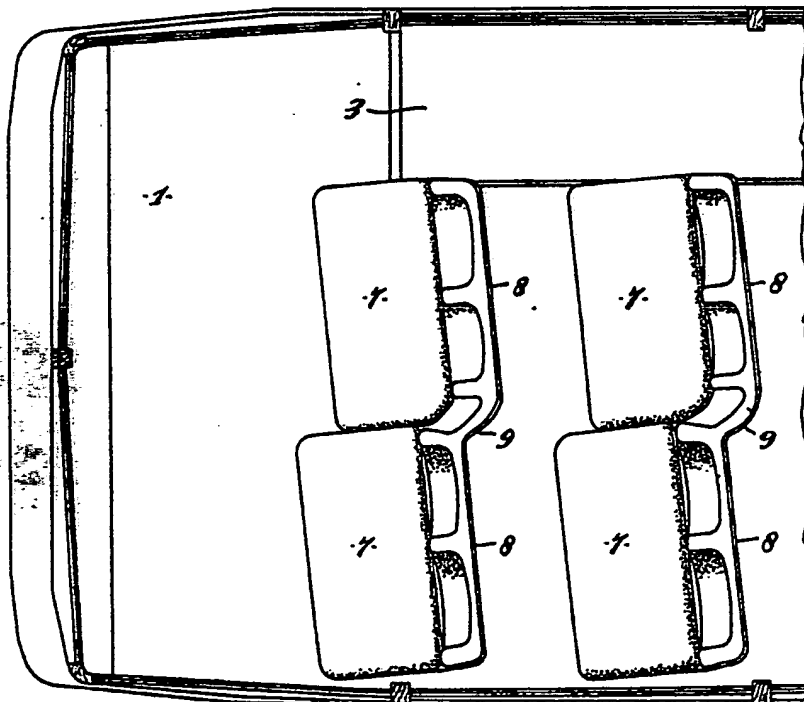
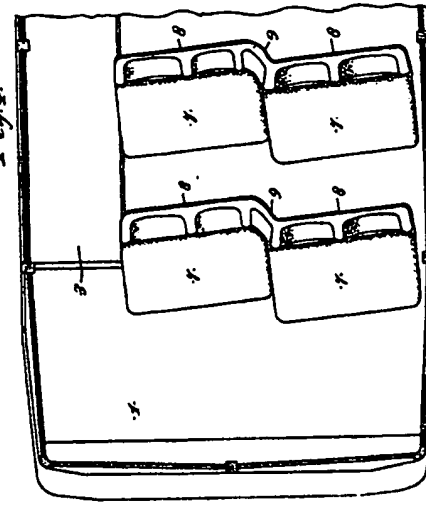
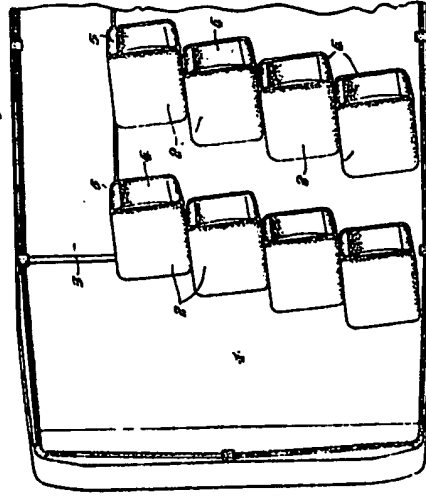
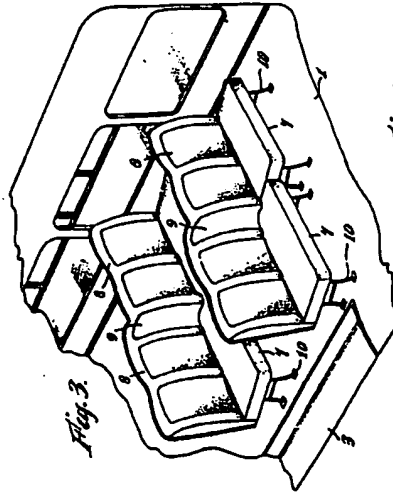
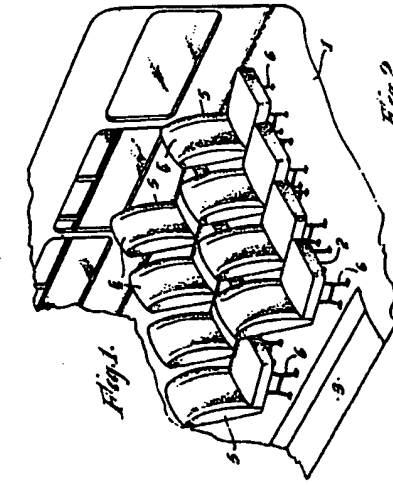


Fig. 3.

Fig. 4.





**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☒ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**